CBSE | DEPARTMENT OF SKILL EDUCATION

AUTOMOTIVE (SUBJECT CODE-804)

MARKING SCHEME FOR CLASS XI (SESSION 2022-2023)

Max. Time: 3 Hours **Max. Marks: 60**

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **24 questions** in two sections – Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (6 + 18 =) 24 questions, a candidate has to answer (6 + 11 =) 17 questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (30 MARKS):**
   - **i.** This section has 06 questions.
   - **ii.** There is no negative marking.
   - **iii.** Do as per the instructions given.
   - **iv.** Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**
   - **i.** This section contains 18 questions.
   - **ii.** A candidate has to do 11 questions.
   - **iii.** Do as per the instructions given.
   - **iv.** Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q. No.	QUESTION	Source Material (NCERT/PSSCIVE/ CBSE Study Material)	Unit/ Chap. No.	Page no. of source material	Marks
Q. 1	**Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**				
i.	Use straight words	NCERT	1	9	1
ii.	Social loafing	CBSE	2	21	1
iii.	external	NCERT	2	95	1
iv.	Ctrl+n	NCERT	3	109	1
v.	Perseverance	NCERT	4	147	1
vi.	Using new technologies	NCERT	5	188	1
Q. 2	**Answer any 5 out of the given 7 questions (1 x 5 = 5 marks)**				
i.	Milage and pickup	CBSE	1	6	**1**
ii.	Resistances	CBSE	2	38	**1**
iii.	Differential unit	CBSE	2	38	**1**
iv.	Disengaged	CBSE	3	46	**1**
v.	Driving thrust	CBSE	4	58	**1**
vi.	Means of friction	CBSE	6	82	**1**
vii.	Filler gauge	CBSE	6	91	**1**
Q. 3	**Answer any 6 out of the given 7 questions (1 x 6 = 6 marks)**				
i.	Gasket oil seal	CBSE	1	8	**1**
ii.	to help in rotate wheels on different speed on turn	CBSE	2	40	**1**
iii.	2000 km – 3500km	CBSE	2	28	**1**
iv.	Light alloy wheel	CBSE	4	58	**1**
v.	RUBBER PLUGGING	CBSE	5	70	**1**
vi.	HIGH	CBSE	6	82	**1**

vii.	Weight and speed of vehicle	CBSE	6	88	**1**
Q. 4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**				
i.	Hot	CBSE	1	11	**1**
ii.	Gear box and final drive	CBSE	2	38	**1**
iii.	Tractive effort	CBSE	3	48	**1**
iv.	The main shaft of gear	CBSE	3	48	**1**
v.	Pneumatic tyre	CBSE	5	70	**1**
vi.	Locked by a nut	CBSE	6	92	**1**
Q. 5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**				
i.	Tuning	CBSE	1	13	**1**
ii.	Slippage	CBSE	2	43	**1**
iii.	Cushioning effect	CBSE	3	48	**1**
iv.	cars	CBSE	4	58	**1**
v.	10000Kms	CBSE	5	71	**1**
vi.	Circlip plier	CBSE	6	92	**1**
Q. 6	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**				
i.	30%	CBSE	1	24	**1**
ii.	Engine assembly and gear box	CBSE	2	43	**1**
iii.	slackness	CBSE	3	51	**1**
iv.	Stub axle	CBSE	4	61	**1**
v.	Tubeless tyre	CBSE	5	70	**1**
vi.	Brake bleeding	CBSE	6	93	**1**

SECTION B: SUBJECTIVE TYPE QUESTIONS

Q. No.	**QUESTION**	**Source Material (NCERT/PSSCIVE/ CBSE Study Material)**	**Unit/ Chap. No.**	**Page no. of source material**	**Marks**
Answer any 3 out of the given 5 questions on Employability Skills in 20 – 30 words each (2 x 3 = 6 marks)					
Q. 7	Effective communication can happen if we follow the basic principles of professional communication skills. These can be abbreviated as 7 Cs, i.e., clear, concise, concrete, correct, coherent, complete and courteous	NCERT	1	14	**2**
Q. 8	Everyone has a role to play in a team, so the pressure to succeed is not on one individual • It helps you to have a support system, as all team members help to fix any mistake made by one team member • You feel good when the team achieves success and it builds your confidence • The work gets done faster	NCERT	2	86	**1**
Q. 9	Header is the top part of a page while the footer appears at the bottom of the page. They contain information that is available on every page at the same place, for example, if we want the title of the document at the top of each page and the page number at the bottom of each page, we can use a header (for title) or a footer (for page number)	NCERT	3	130	**2**

Q. 10	A business idea is a solution that an entrepreneur thinks of, to serve the customer. An idea determines what business activity an entrepreneur would take up to make financial gains. An idea can be product-service based or a hybrid model	NCERT	4	156	**2**
Q. 11	This mission aims to clean up Indian cities, towns, and villages. One of its main aims is to achieve an Open-Defecation Free India by October 2, 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing toilets across the country	NCERT	5	179	**2**
Answer any 3 out of the given 5 questions in 20 – 30 words each (2 x 3 = 6 marks)					
Q. 12	The leakage of lubricating oil can be traced by following a few simple steps. • Set a newspaper under the engine. • Now run the engine for 5 min (do not move the vehicle). • The newspaper will have spots if there is leakage. • Exactly perpendicular to the spot will be the area of leakage. Stop the leakage by changing the gasket oil seal, etc	NCERT	1	106	2
Q. 13	The differential is a device that allows each of the driving wheels to rotate at different speeds, when the car turns a corner. In vehicles without a differential, both driving wheels are forced to rotate at the same speed, usually on a common axle driven by a simple chain-drive mechanism.	NCERT	2	128	2
Q. 14	Follow the steps given below to change the lubricating oil: • Run the vehicle for 2–3 km. • Place a container below the drain plug of the gearbox. Open the filler and drain plug and leave it for appropriate time, for the oil to completely drain out. • Replace the washer of drain plug and tighten it to the specified torque. • Refill the gear oil of specified grade and quantity up to the level mark. • Close the level or filler plug.	NCERT	3	135	2
Q. 15	Steps for Adjusting Wheel Play • Place washer and tightened the castle nut. • Check the wheel by turning • If there is friction, loosened the castle nut • Check again for friction • Wheel should roll freely • Lock the castle nut with the use of spilt pin	NCERT	4	142	2

	• Fit the grease cup by filling with new grease • Lift the vehicle with jack and take out the stand • Remove the jack by lowering it down				
Q. 16	. Functions of a Good Braking System • The brakes should stop the vehicle in shortest possible distance and without skidding the vehicle. • The brakes should work equally well both on fair and bad roads. • Pedal effort applied by the driver should not be more, so as, not to strain the driver. • Brakes should work equally well in all weathers. • It should have very few wearing parts. • It should require little maintenance. • Brakes, when applied should not disturb the steering geometry. • There should be minimum sound when brakes are applied	NCERT	6	152	2
Answer any 2 out of the given 3 questions in 30– 50 words each (3 x 2 = 6 marks)					
Q. 17	Checking circulation of water in cooling system • Switch off the ignition switch of vehicle • Remove the negative terminal from the battery • Turn the upper radiator cap slowly and allow the steam or water vapor to release from the radiator • Turn the radiator cap and remove the cap from the neck of the radiator • Connect the battery terminal and switch on the ignition • Start the engine at idle speed • Inspect the circulation of water in the radiator • Circulation of water should be observed as rate of inlet must be equal to rate of outlet of coolant • It work healthy running of coolant system	NCERT	1	119	**3**
Q. 18	To check the quality of oil in the gearbox, the following procedure may be adopted: – Take a drop of used oil and place it on the nail of thumb, while the thumb is being held vertically upward. Check the viscosity of old lubricating oil (flow of oil) in the downward direction. Similarly, check the flow of new oil, on the other hand's thumbnail, and	NCERT	3	135	**3**

	compare the resistance to flow for both. The used oil will flow faster in comparison to new oil. – Check the oiliness of the oil by rubbing continuously on the hand skin. The old oil will smell of used oil. The oil should not have a burnt smell				
Q. 19	Process of removing trapped air from the fluid line is called 'bleeding' otherwise, it may cause spongy brakes. • Fill the master cylinder's reservoir with brake fluid up to the topmost level marked on it. • Ask the companion to sit on driver's seat and create fluid pressure by pressing and releasing the brake pedal several times. You will feel that the pedal becomes hard. • Asked the companion to keep up foot pressure on brake pedal. • Insert one end of the pipe over the bleeding nipple and let the other end in a glass bottle or jar. • Release the fluid pressure by opening the bleeding nipple and farther most wheel cylinder from master cylinder. There will be bubbles with brake fluid coming out in the bottle or jar. • Tighten the nipple and the brake pedal goes to floorboard as air and brake fluid are released from the nipple. • Again ask your companion to repeat the procedure and release the pressure through the same nipple. This time there should be no bubbles and only the brake fluid should be coming out of it. • Check the fluid level, it will be bit down, then top-up the level. • Apply the same steps to other wheel cylinders also, turn by turn.	NCERT	6	157	**3**
Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)					
Q. 20	Steps for Checking of Valve Timing • Remove the timing cover • Check the alignment of the following: – Turn the crankshaft pulley with the transmission belt. The mark on the pulley must align with the crankcase mark. At the same time the camshaft pulley mark must align with the crankcase marking. This indicates proper valve timing.	NCERT	1	125	**4**

	Steps for Checking of Ignition Timing • Connect the stroboscope connection as per the prescribed manual. • Now hold the stroboscope lamp and run the engine and flywheel at idle speed • Check that the timing mark on the flywheel matches with the pointer of crankcase housing. The time lamp must glow, showing the alignment at the same time. • This indicates proper ignition timing in the system.				
Q. 21	The entire mechanism that transmits power from the engine to the wheel is known as the transmission system. It is also called power train Gearbox or Transmission Gearbox is a part of the transmission system as the gears play an important role in transmitting the engine power to the wheels and overcoming resistance like gradient resistance, air resistance and load resistance. Gears is placed between the clutch and propeller shaft or differential. Propeller Shaft To transmit the power with variation of the angle and variation in length in relation with front and rear axle, the propeller shaft is used; this is connected between gear box and final drive.	NCERT	1	128	**4**
Q. 22	Steps for Repairing Mechanical Brakes • Remove or unthread the wheel nuts with spanner and separate the wheel from brake drum. • Straighten and pull out the spilt pin, fitted in castle nut, using combination plier. • Lock the axle shaft and open the castle nut using socket and handle. • Hammer the axle shaft lightly by using brass drift, this may contract the brake drum loose and remove the brake drum. • Remove brake shoe lock, mount on anchor pin, with the help of nose plier. • Serrate the brake shoes from brake lever cam and the steady post. • Clean the brake shoes and the brake drum with the help of emery paper. • Fit both the	NCERT	6	153	**4**

	shoes on the cam and anchor pin and lock them. Fit the brake drum over the axle shaft and tighten the castle nut with the help of socket and handle. • Tighten the brake shoe adjusting nut with the help of spanner, this makes the shoes to expand and grip the drum firmly . • Loosen the adjusting nut by a little amount and turn the wheel, it must roll free. Do the shoe adjustment this way. • Tighten the main nut locked it properly. • Fit the wheel over brake drum and tighten wheel nuts.				
Q. 23	For friction-free rotation of wheels, it is necessary to lubricate, the wheel hub and wheel bearing at specified intervals. Bearing grease is used to lubricate these items. Steps for Removing Wheel from Axle • Place wooden blocks to lock the wheel. • Loosen the wheel nuts by using wheel spanner. • Lift the vehicle by placing a hydraulic jack under the front axle and make it rest on stands. Remove the jack. • Remove the grease cup with the help of a hammer and screwdriver. • Straighten the split pin and takeout by using combination plier. • Unscrew the castle nut and take it out. • Remove the brake drum from stub axle. • Remove the wheel and hub from stub axle.	NCERT	4	141	**4**
Q. 24	Instruments and Material required • Bodkin • Wire brush • Cold patch adhesive solvent • Rubber plugs of different diameter • Knife **Procedure** • Locate the puncture by inflating tyre and immersing the tyre with wheel rim in a water tank and mark it. • Take out the nail if any and judge the puncture size, as the rubber plug to be selected is according to the puncture size. • Clean the puncture and its surrounding with the help of a wire brush. • Apply solvent with the help of bodkin to	NCERT	5	149	**4**

	the punctured hole • Select a correct size of rubber plug and attach it with the bodkin. • Dip the bodkin along with rubber plug to the puncture with the help of bodkin • Slowly take out the bodkin. The rubber plug will be in the puncture. • Cut the rubber plug approximately 6 mm above the tyre trade. • Fill the air in the tyre. • Tyre is ready for use.				